# BEAUFORTIA

INSTITUTE OF TAXONOMIC ZOOLOGY (ZOOLOGICAL MUSEUM)
UNIVERSITY OF AMSTERDAM

Vol. 41, no. 28 October 22, 1990

# A REDESCRIPTION OF THE SPECIMENS OF "TELESTO HUMILIS" (OCTOCORALLIA) COLLECTED BY PRINCE ALBERT IER OF MONACO, WITH THE DESCRIPTIONS OF FOUR NEW SPECIES

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ABSTRACT

Four new octocoral species, *Telestula stocki, Telestula batoni, Telestula verseveldti*, and *Telestula kuekenthali* are described and illustrated and a redescription is given of *Telesto humilis* Thomson, 1927. All the species mentioned were collected during expeditions by Prince Albert Ier of Monaco in the Eastern Atlantic during the period 1896-1912.

## INTRODUCTION

During the years 1886-1915, Prince Albert Ier of Monaco undertook his famous oceanographic expeditions aboard his yachts "Hirondelle" (1886-1888), "Princesse-Alice" (1893-1897), "Princesse-Alice II" (1898-1910) and "Hirondelle II" (1911-1915). During these campaigns many deep-sea species were collected, among which were numerous Octocorallia that were described by Studer (1901) and Thomson (1927). Amongst the new species described by the latter was *Telesto humilis*. Recently, the old octocoral collections of the Musée Océanographique de Monaco have been unearthed by Dr. Christian Carpine, who undertook to catalogue the specimens. As a result, a critical catalogue of the gorgonians and pennatulaceans has been published by Carpine & Grasshoff (1985). In order to pursue this endeavor, Dr. Carpine entrusted the alcyonarian collection to Dr. Jaap Verseveldt and the stoloniferans to myself. It was in this collection that I found eight specimens labeled either "*Telesto humilis* n.sp." or "*Telesto humilis* TYPE". Close examination of the sclerites, however, clearly showed these specimens to belong to five different species, which will be described below.

## MATERIAL AND METHODS

All the material comes from the collections of the Musée Océanographique de Monaco (MOM). Most of the specimens sent to me, originally preserved in alcohol, had unfortunately dried up, many of them probably decades ago. The material is extremely brittle, and the colonies badly fragmented most of the time. All polyps are fully retracted, showing only the anthostele, and tentacles are completely dried up. Substratum and stolons are lacking in most of the specimens. The descriptions are therefore incomplete, but nevertheless allow us to recognize five different species, four of them new ones.

Whenever possible, sclerite preparations were made of different parts of the colonies. Sclerites were drawn with a camera lucida, and measured with an eyepiece micrometer. Dimension ranges are given for length (L) and width (W).

For the morphological and anatomical terms used, I refer to Bayer et al. (1983).

## THE TELESTACEA

Whereas in the old days the differences between Stolonifera and Telestacea seemed very clear, by modern standards these ordinal taxa seem to merge. Within the Stolonifera (comprising the Telestacea) Bayer (1981a) distinguishes the subfamily Clavulariinae (*Bathytelesto, Clavularia, Rhodelinda, Scyphopodium*): "polyps tall, cylindrical or trumpet-shaped, rarely or never budding secondary polyps laterally" from the Telestinae (*Carijoa, Paratelesto, Telesto, Telestula*): "polyps tall, cylindrical, commonly budding secondary polyps laterally". The distinction is subtle, and one must have many specimens in order to be able to say whether secondary polyps are "common" or "rare". Recently, Bayer (pers. comm.) stated: "I still have the same doubt about the distinction of Stolonifera/Telestacea/Alcyonacea/Scleraxonia. Morphologically, they merge imperceptibly".

In this paper I will let this controversial matter rest. For the description of the species, distinction was made between the following genera (definitions partly based on the foregoing and on Bayer, 1961, 1981b, pers. comm.):

Genus **Clavularia** de Blainville, 1830: Short or tall cylindrical polyps arising from stolons, not producing secondary polyps. Anthosteles reinforced with sclerites, anthocodiae entirely retractile into the calices. Sclerites are usually tuberculate or thorny spindles or rods, anthocodial sclerites being arranged as crown and points. Species occurring in shallow and in deep water.

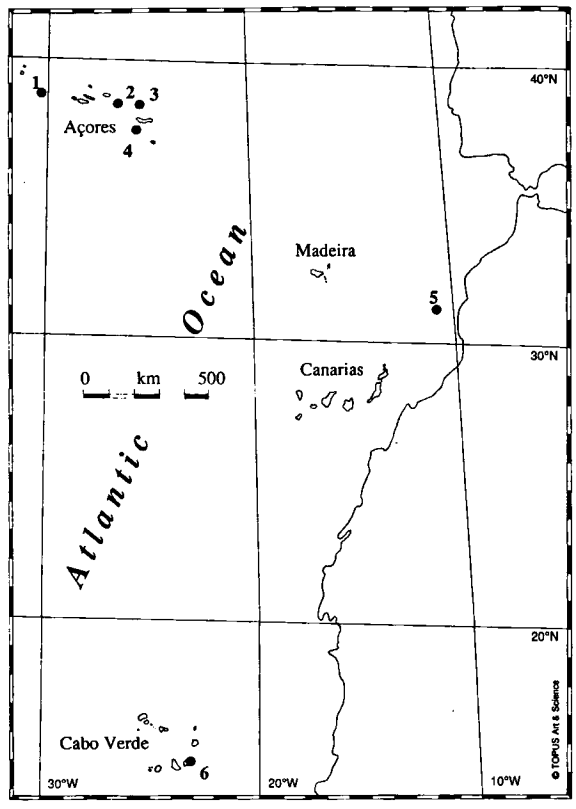
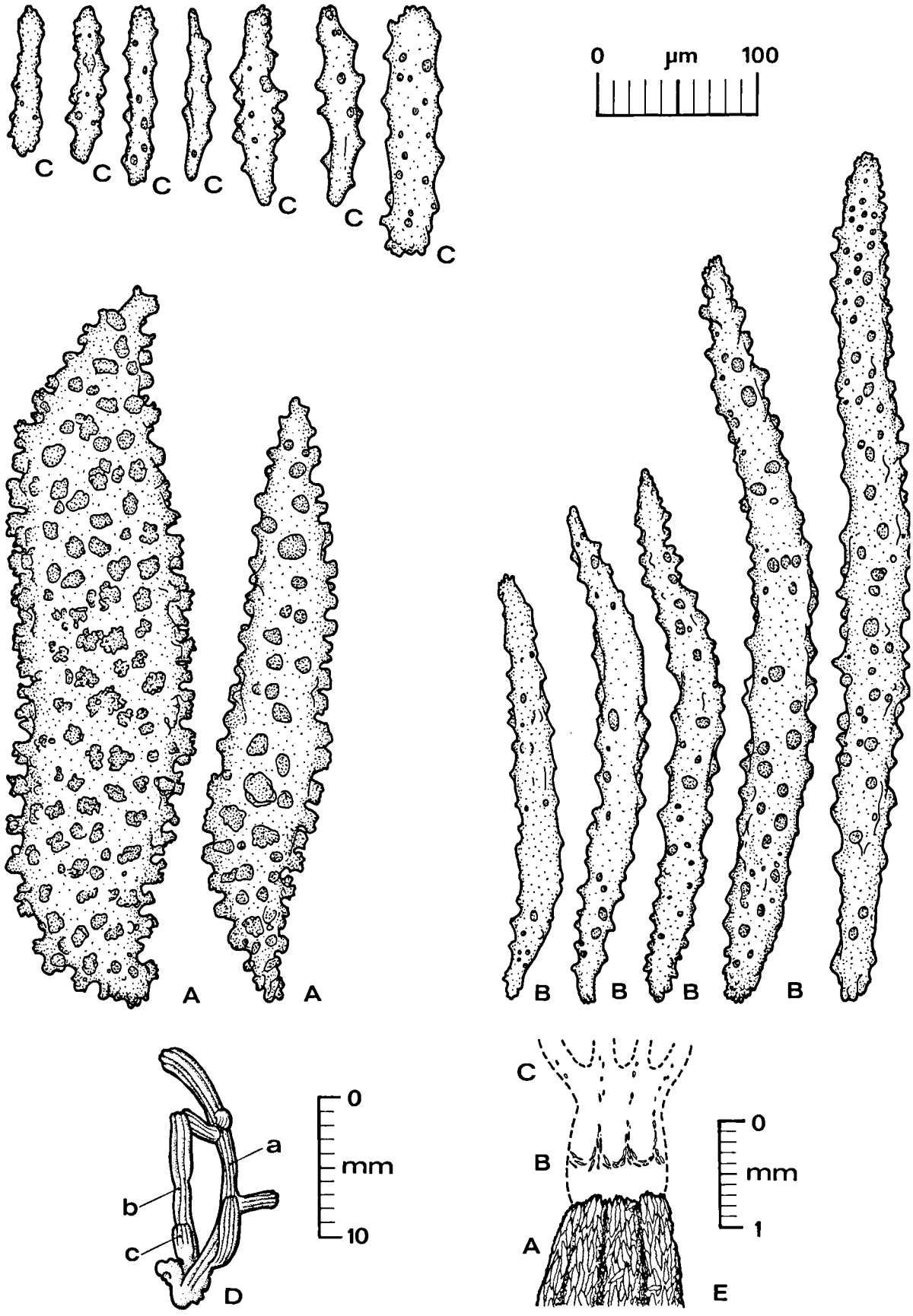



Fig. 1. Map of the area where the different species were found. 1 = *Telestula batoni*; 2 and 3 = *Telestula humilis*; 4 = *Telestula kuekenthali*; 5 = *Telestula verseveldti*; 6 = *Telestula stocki*.

Genus **Telestula** Madsen, 1944: Tall polyps arising from stolons. Colonies monopodial with tall cylindrical axial polyps and shorter lateral polyps. Branching loose and open, not dense, never beyond third order. Lower part of gastric cavities filled in with sclerite-bearing mesogloea except for eight longitudinal canals. Sclerites are densely tuberculate plump spindles or

Plate 1. Lectotype of *Telestula humilis* (MOM 120117). A: plump, tuberculate spindles from anthostele. B: curved spindles from crown and points. C: plates and rods from tentacles (all sclerites scale bar of 100 μm). D: colony, with primary (a), secondary (b) and tertiary (c) polyps. E: detail of distal part of anthostele with a speculative reconstruction (dotted lines) of anthocodia and tentacles after dissection of a retracted polyp.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cylinders, sometimes slightly flattened. Deep-water species (500-2000 m).

Genus **Telesto** Lamouroux, 1812: Tall polyps arising from stolons. Colonies monopodial with tall cylindrical axial polyps and shorter lateral polyps. Branching loose and open, not dense, commonly beyond third order. Gastric cavities open to base of polyps, because intrusion of sclerite-bearing tissue is absent. Sclerites are blunt, coarsely tuberculate spindles or rods, sometimes fused together in clumps, but never forming rigid tubes. Shallow-water species (< 100 m).

## DESCRIPTION OF THE SPECIES

**Telestula humilis** (Thomson, 1927)

Synonym: *Telesto humilis* Thomson, 1927

Material: 2 colonies, one preserved in alcohol [a] (MOM 120117) and a dried one [b] (MOM 120692).
Locality: Station 837, Azores (37°55′ N, 25°24′15″ W)
Collection date: 22-24/07/1897, aboard "Princesse-Alice"
Depth: 880 m
Bottom type: rock
Additional material: 1 single polyp [c] (MOM 120073)
Locality: Station 575, Azores (38°27 N, 26°30′15″W)
Collection date: 13/07/1895, aboard "Princesse-Alice"
Depth: 1165 m
Bottom type: muddy sand

Description: Specimen [a] is labeled "n.sp." by Thomson, and for that reason I have chosen to designate it as the lectotype for the species *humilis*. The size of the colony is about 18 mm, with 8 polyps attached to it and 6 loose ones (primary, secondary and tertiary polyps are present, see Pl. 1D). The height of the fully retracted polyps ranges from 3-12 mm; their width is 1-1.5 mm. Dissection of one retracted polyp (Pl. 1E) showed that the anthocodial sclerites are arranged in crown and points, as is common in *Clavularia*. Three different types of sclerites can be distinguished here: small plates and rods (Pl. 1C), from the tentacles (L = 95-160 μm; W = 20-40 μm); long, slender, sometimes slightly curved spindles with small rounded tubercles (Pl. 1B), from the crown and/or anthocodia (L = 100-560 μm; W = 12-45 μm); large, plump spindles densely covered with tubercles (Pl. 1A) from anthostele (L = 260-555 μm; W = 65-125 μm). These sclerites come closest to Thomson's description (Thomson, 1927: p. 55 and Pl. VI fig. 3). It should be noted, however, that the sclerites pictured by Thomson (1927) in his Pl. VI, fig. 3, bear only a vague resemblance to the sclerites I found.

Specimen [b] is a dry colony on a totally encrusted 110 mm long antipatharian axis labeled *Leiopathes grimaldii* Roule. Except for about 10 loose polyps, some small attached ones are visible. In the basal part of the polyps, intrusion tissue is present. The stolons are flattened and vary in width from 1-3 mm. The stolonal sclerites (Pl. 2) are spindles and rods with conical points and some tubercles (L = 185-560 μm; W = 50-100 μm). The antipatharian and the octocoral are covered by an encrusting sponge. However, this specimen corresponds beyond any doubt to Thomson's Pl. IV fig. 13, on which a small colony closely resembling specimen [a] is depicted, which has since been fragmented.

Specimen [c] is a single polyp, 4.5 mm high. It is therefore impossible to make a preparation of sclerites without destroying the specimen. However, Thompson wrote on a label that this is the type-specimen! One should note that the geographical locality and the depth are quite similar to those of specimens [a] and [b]. Since I am fairly confident that Thomson based his description on these three specimens, the above-mentioned data complete his description, based on better conserved material, part of which is here given (my translation):

"A typical colony measures 21 mm in height and shows an irregularly twisted primary polyp from which sprout six lateral secondary polyps, some of which yield third-order polyps. Every-

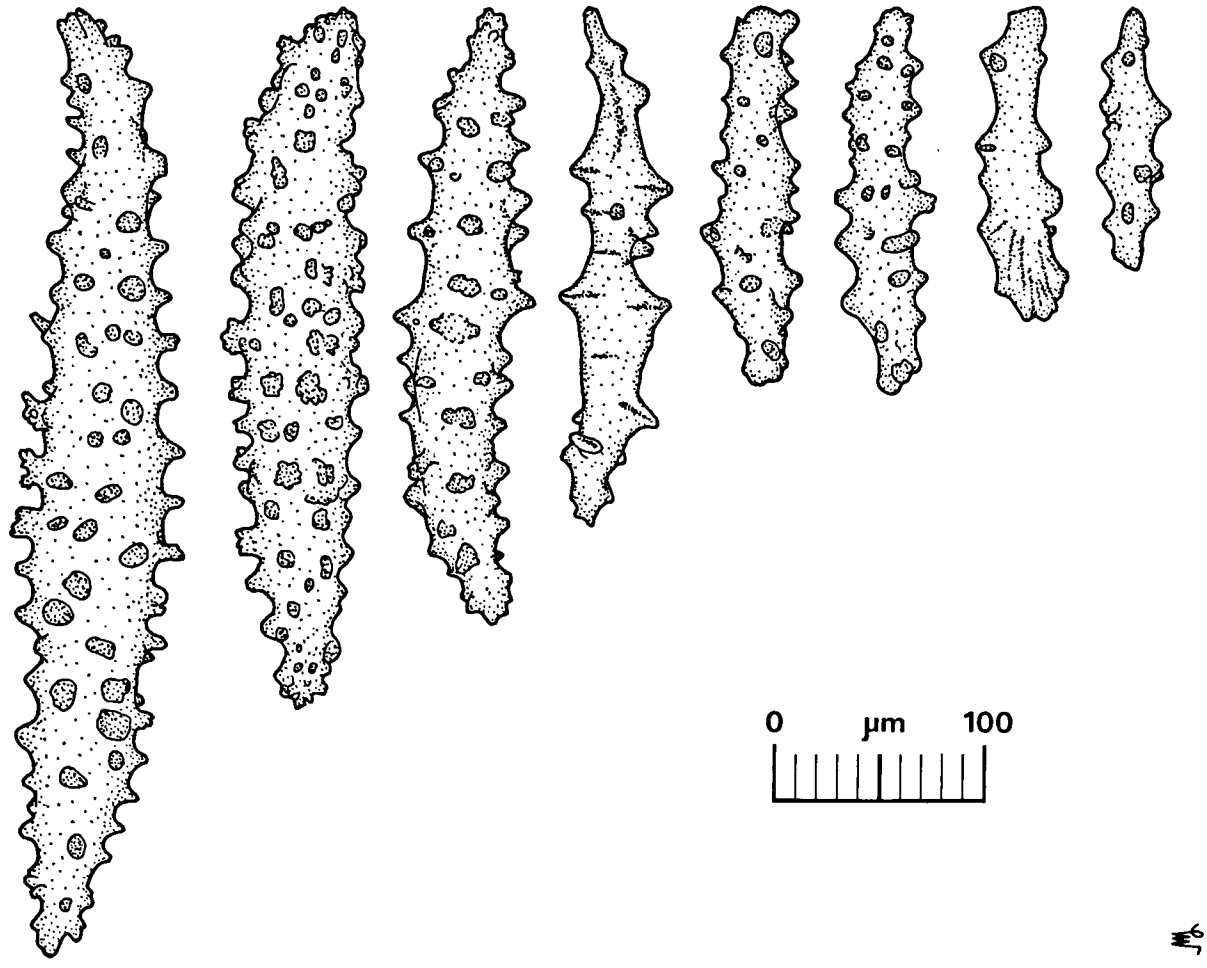



Plate 2. Paralectotype of *Telestula humilis* (MOM 120692). Spindles and rods from stolon.

where, the surface shows eight narrow longitudinal grooves and the spicules [= sclerites, SW] are arranged lengthwise. The anthocodial parts of the polyps are retracted everywhere. Most polyps have a diameter of about 1 mm. Many samples consist of a single polyp only, and look very much like some forms of the genus *Clavularia, Cl. Marioni* [sic, SW] for instance, and their spicules are not, for the most part, of the irregular type known from *Telesto.* These samples conform, however, to the structure of those bearing secondary lateral polyps, and should, therefore, be excluded from the genus *Clavularia*''.

I agree with Thomson on the latter. However, the specimens do not correspond to *Telesto* either (sclerites not typical, deep-water species), but to *Telestula* (intrusion tissue), although the sclerites are rather of the *Clavularia*-type. None of the other specimens conform to this description, so Thomson probably never examined them, maybe assuming from their outer appearance that they belonged to *Telesto humilis* as well. Since as far as I can tell from the older publications, which are often difficult to interpret, they correspond to no other known Stoloniferan either, I venture to describe the remaining five specimens as new species. Although it is beyond the scope of this paper, a revision of the Atlantic Stolonifera based on a redescription of all the material available is badly needed.

**Telestula stocki** n.sp.

[Paralectotype of *Telesto humilis* Thomson, 1927]

Material: 1 specimen, preserved in alcohol [a] (MOM 120175).
Locality: Station 1193, Cape Verde Islands (15°17′ N, 23°01′45″ W)
Collection date: 15/08/1901, aboard "Princesse-Alice II"
Depth: 1311 m
Bottom type: greenish sandy mud

Additional material: 1 fragmented colony, preserved in alcohol [b] (MOM 120731)
No further indications on collection locality or date.

Description: specimen [a] comprises 5 loose polyps of a height of 11 mm. The sclerites of the anthostele (Pl. 3A) are long, slender spindles with numerous smooth tubercles (L = 110-1000 μm; W = 20-85 μm), whereas those of the top of the polyps can be divided into three categories: flat plates and rods with some small tubercles (Pl. 3D), probably from the tentacles (L = 140-240 μm; W = 20-40 μm); tuberculate, slightly incurved rods (Pl. 3C), probably from either tentacles or crown and points (L = 300-370 μm; W = 40-60 μm) and slender spindles with minute tubercles (Pl. 3B), probably from either crown and points or anthocodia (L = 370-430 μm; W = 30-35 μm). No intrusion tissue visible.

Specimen [b] consists of a membranous stolon, 1-3 mm wide, from which small colonies sprout. Primary and secondary polyps (max. height 15 mm) can be distinguished. Intrusion tissue is present in the lower part of the gastric cavity of some of the approximately 25 polyps. The sclerites of the top of the polyp (Pl. 5C) and those of the anthostele (Pl. 4A) correspond to those of specimen [a], although in the anthostele, among the long, densely tuberculate spindles some were encountered that were longer and plumper (dimensions: L = 170-1225 μm; W = 15-160 μm). In this specimen, two more types of sclerites were encountered. Those of the stolon are either slender, sparsely tuberculate spindles and rods (Pl. 5A: L = 70-300 μm; W = 20-65 μm) or plump, densely tuberculate spindles and rods (Pl. 5B: L = 60-455 μm; W = 20-80 μm). In the anthostele somewhat irregular spindles occur (Pl. 4B) with few, but very prominent conical spines (L = 170-615 μm; W = 30-85 μm). These may correspond to the intrusion tissue.

In this species, as in the preceeding one, the sclerites are rather of the *Clavularia*-type, whereas intrusion tissue is not always present, thus further blurring the distinction between *Clavularia* and *Telestula*.

Etymology: *stocki*, after Jan Hendrik Stock, Dutch zoologist (born 1931) and Professor of Special Zoology at the Institute of Taxonomic Zoology from 1968-1990. Jan Stock was my esteemed tutor during the years 1973-1979, and sharpened my interest in marine biology.

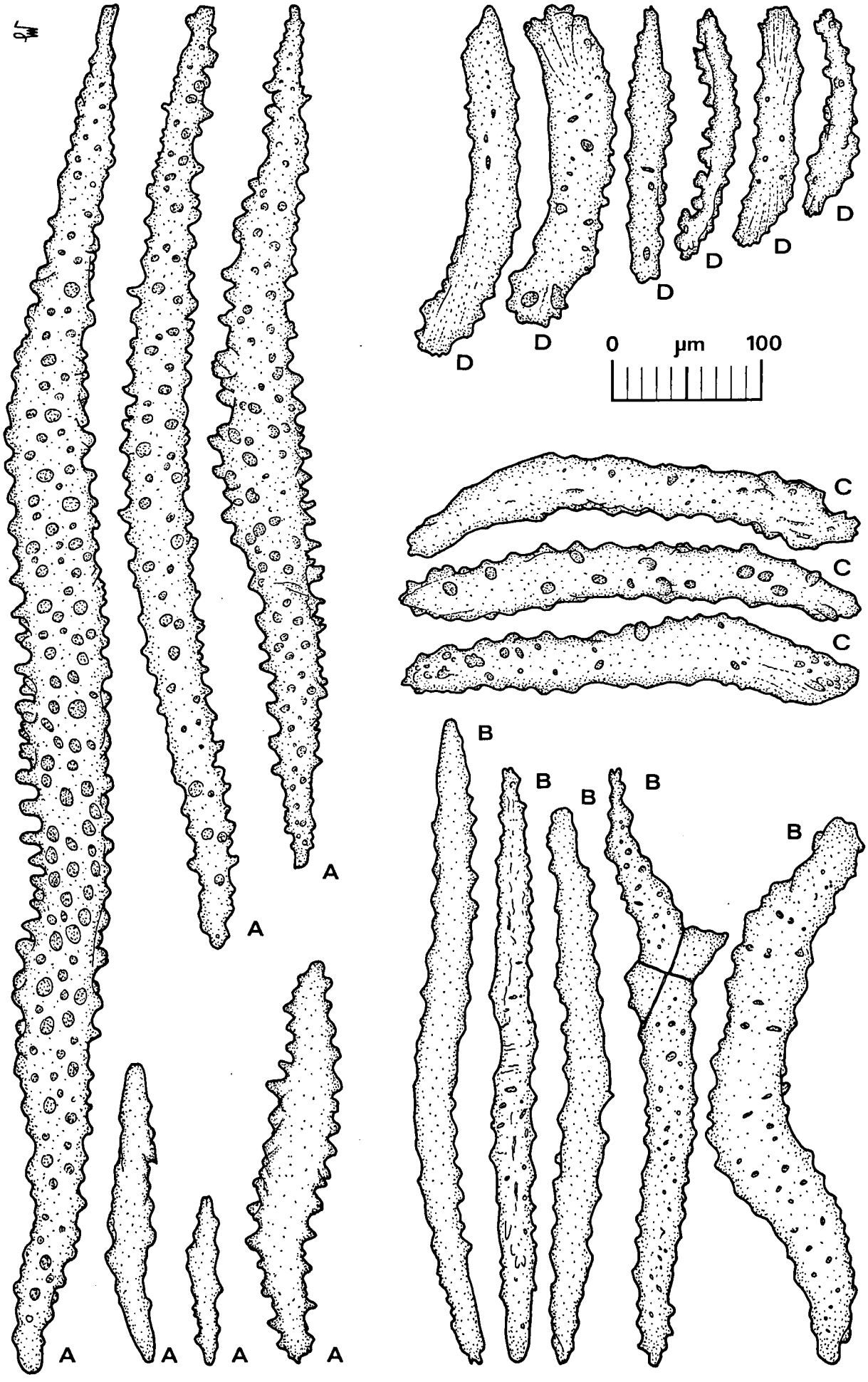
**Telestula batoni** n. sp.

[Paralectotype of *Telesto humilis* Thomson, 1927]

Material: 6 loose polyps in alcohol (MOM 120295).
Locality: Station 3293, Azores (38°47′ N, 30°16′ W)
Collection date: 26/08/1912, aboard "Hirondelle II"
Depth: 1331 m
Bottom type: ?

Description: The loose polyps measure 13 mm in height. Four types of sclerites can be distinguished. From the top of the polyp come small, irregular plates with tiny tubercles (Pl. 6D), probably from crown and tentacles (L = 60-110 μm; W = 10-30 μm) and plump, tuber-

Plate 3. *Telestula stocki* n. sp. (MOM 120175). A: long, slender spindles from anthostele. B: slender spindles from crown and points. C: incurved rods from tentacles and/or crown and points. D: flat plates and rods from the tentacles.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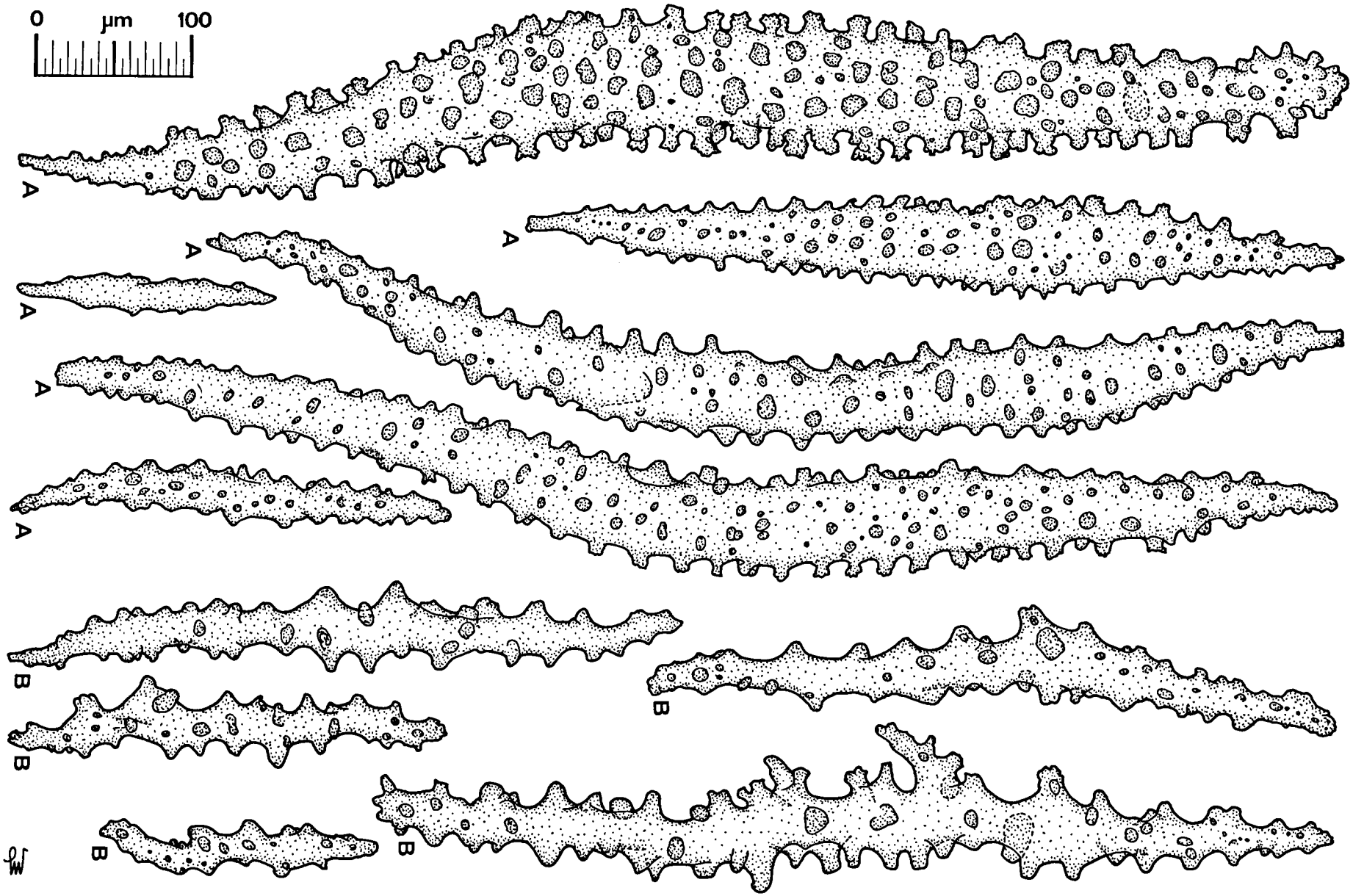
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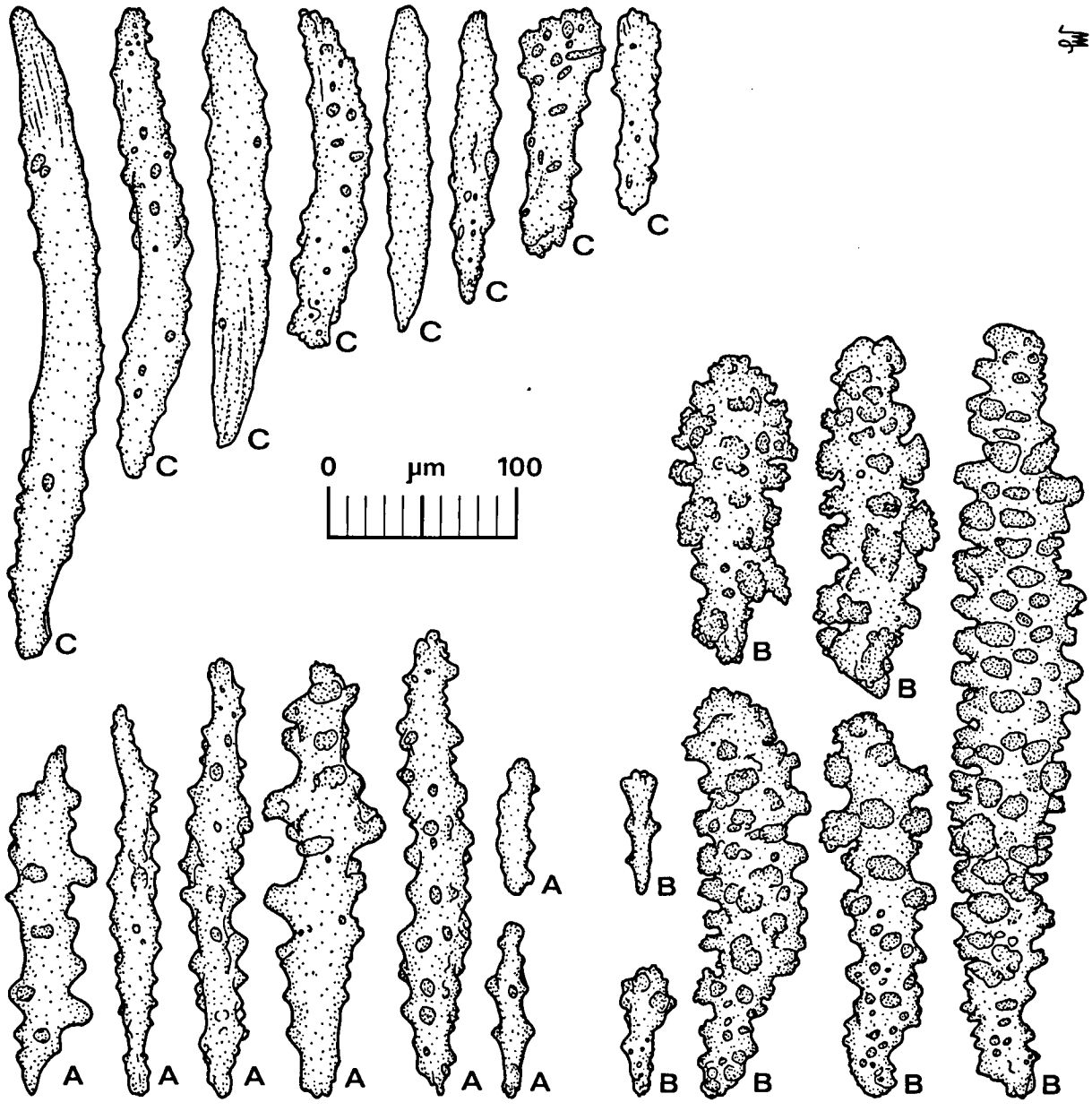


Plate 5. *Telestula stocki* n. sp. (MOM 120731). A: sparsely tuberculate spindles and rods from stolon. B: plump, densely tuberculate spindles and rods from stolon. C: plates from top of polyp (tentacles?).

Plate 4. *Telestula stocki* n. sp. (MOM 120731). Sclerites from anthostele. A: very long, densely tuberculate spindles. B irregular spindles with conical spines (intrusion tissue?).

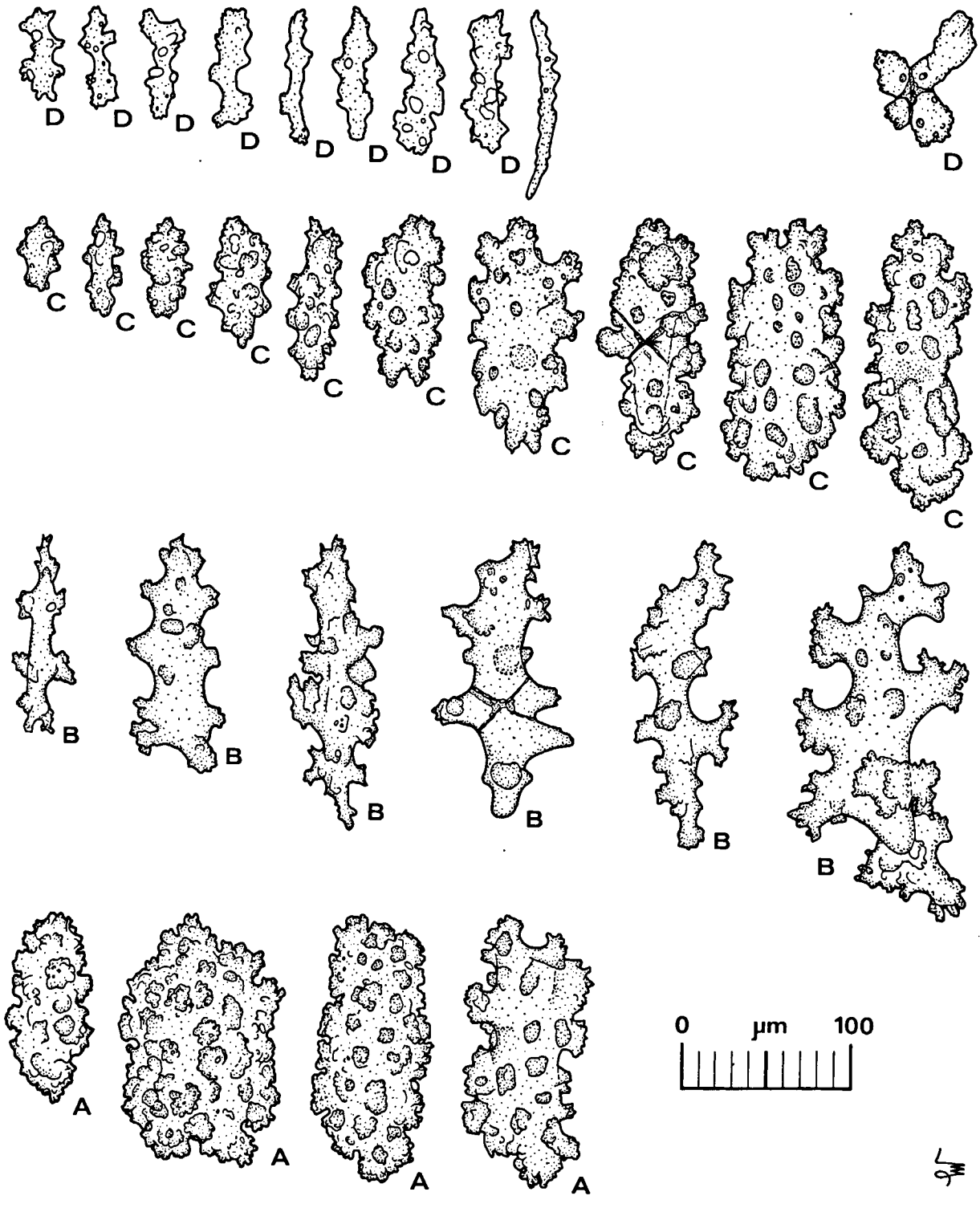


Plate 6. *Telestula batoni* n. sp. (MOM 120295). A: plump, densely tuberculate spindles from anthostele. B: irregular spindles from anthostele (intrusion tissue?). C: plump, tuberculate spindles from top of polyp (anthocodia?). D: small, irregular plates from top of polyp (crown and tentacles?).

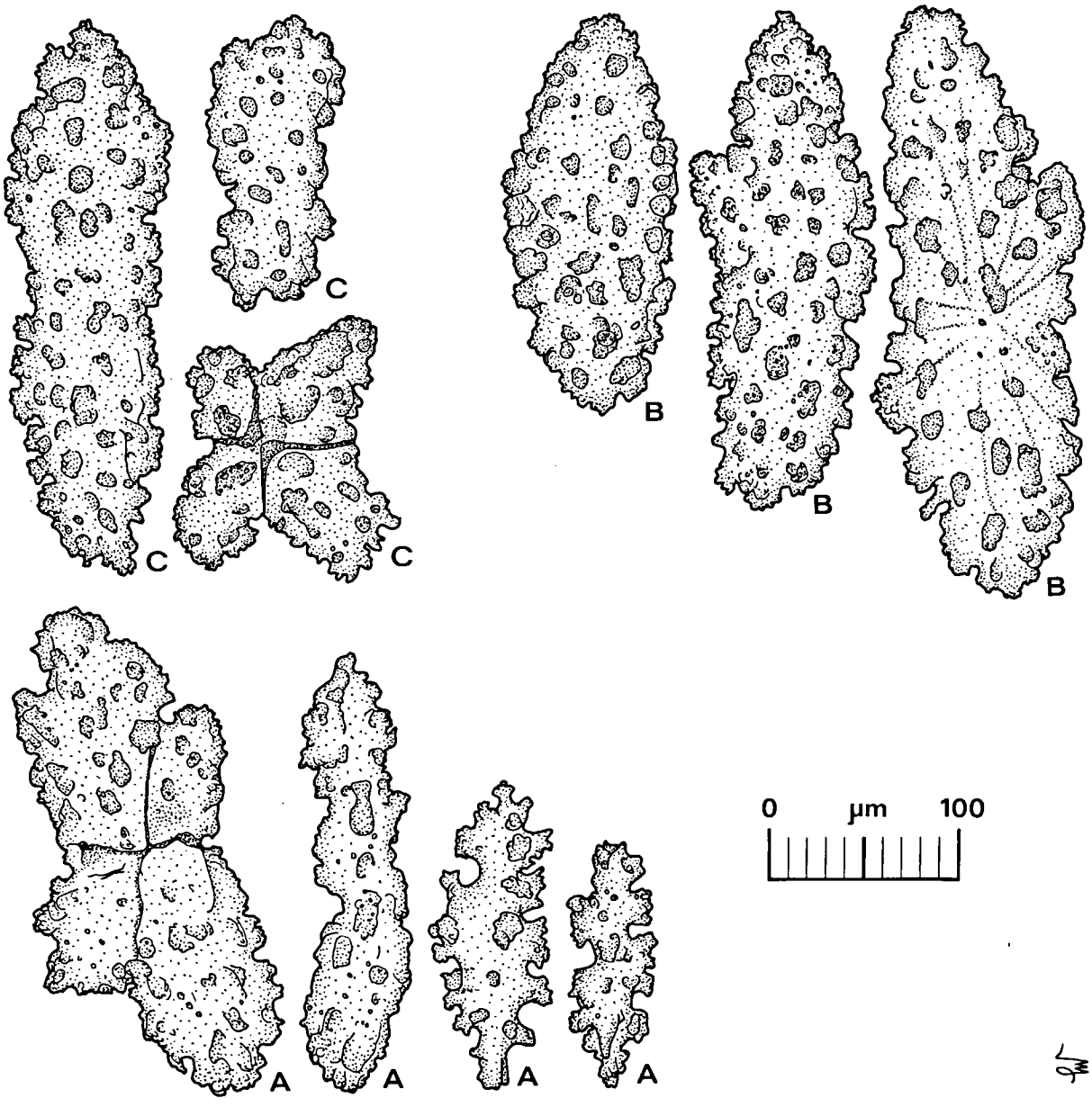


Plate 7. *Telestula verseveldti* n. sp. (MOM 120154). A: irregular spindles from stolon. B: densely tuberculate rounded spindles from anthostele. C: similar sclerites from top of polyp (anthocodia?).

culate spindles (Pl. 6C), maybe from crown and tentacles but more likely from anthocodia (L = 45-170 µm; W = 25-75 µm). From the anthostele come very irregular spindles (intrusion tissue?) with a few prominent, warty tubercles (Pl. 6B: L = 120-230 µm; W = 35-110 µm) and plump spindles densely covered with tubercles (Pl. 6A: L = 110-170 µm; W = 50-100 µm).

Etymology: *batoni*, after Jean Bâton, pseudonym under which Jan Stock (see preceeding species), author of over 440 scientific articles, wrote fiction (mainly short stories).

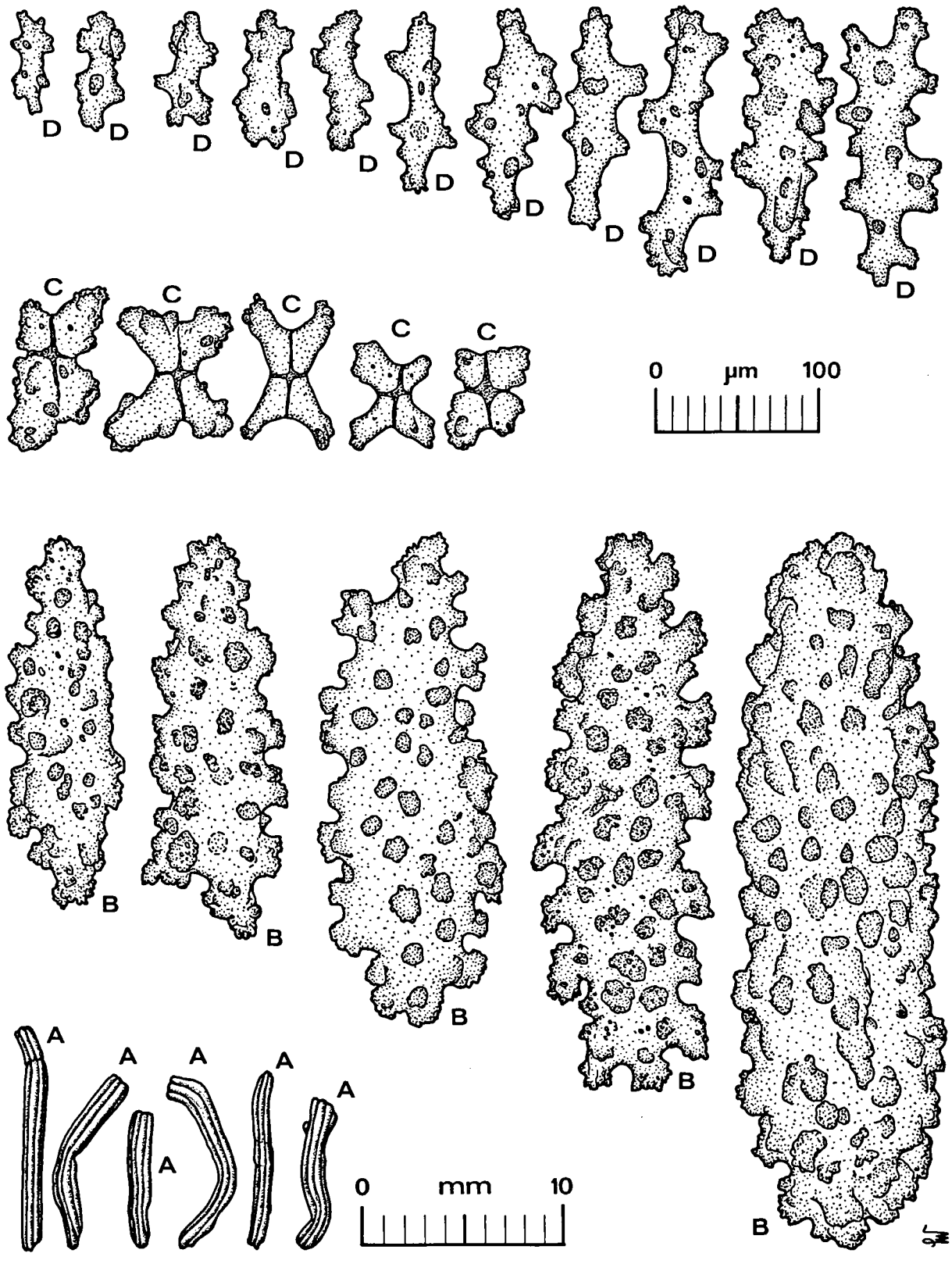


Plate 8. *Telestula kuekenthali* n. sp. (MOM 120101). A: loose polyps. B: plump, coarsely tuberculate spindles from anthostele. C: cross-shaped sclerites from top of polyp. D: irregular spindles from top of polyp.

**Telestula verseveldti** n. sp.

[Paralectotype of *Telesto humilis* Thomson, 1927]

Material: scleractinian coral fragments with stolon, ca. 15 loose polyps (MOM 120154).
Locality: Station 1116, Morocco, off Mogador [nowadays Essaouira] (31°43'30" N, 10°46'45" W)
Collection date: 11/07/1901, aboard "Princesse-Alice II"
Depth: 2165 m
Bottom type: globigerine mud

Description: the flat, ribbonlike stolon has a width of 1 mm. The polyps measure 9 mm. The sclerites are all variations on warty spindles. Stolonal sclerites (Pl. 7A) are irregular spindles with loosely distributed, large tuberculate knobs (L = 120-270 μm; W = 50-120 μm). The sclerites of the anthostele (Pl. 7B) are more densely covered with tubercles and are larger, rounder and less irregular than those of the stolon (L = 210-320 μm; W = 90-120 μm), while those of the top of the polyp (Pl. 7C: anthocodia ?) resemble closely those of the anthostele but have a more rectangular outline (L = 150-300 μm; W = 70-90 μm).

Etymology: *verseveldti*, after Dr. Jakob Verseveldt, Dutch zoologist and octocoral specialist (1903-1987).

**Telestula kuekenthali** n. sp.

[Paralectotype of *Telesto humilis* Thomson, 1927]

Material: 17 loose polyps in alcohol (MOM 120101).
Locality: Station 663, Azores (37°28'30 N, 25°31'45" W)
Collection date: 27/06/1896, aboard "Princesse-Alice"
Depth: 1732 m
Bottom type: calcareous sandy mud

Description: the polyps (Pl. 8A) reach a maximum height of 11 mm. The sclerites from the anthostele (Pl. 8B) are plump spindles covered with coarse tubercles (L = 170-525 μm; W = 50-185 μm); those from the top of the polyp, probably from the tentacles, maybe also crown and anthostele, are irregular spindles (Pl. 8D: L = 65-170 μm; W = 25-60 μm) and also contain a large percentage of fused cross-shaped sclerites (Pl. 8C).
Etymology: *kuekenthali*, after Willy Kükenthal, German biologist (1861-1922) and one of the greatest Octocoral scientists of this century.

ACKNOWLEDGEMENTS

I should like to thank Dr. Christian Carpine (Musée Océanographique, Monaco) for putting the material at my disposal. I also wish to express my gratitude to Dr. Frederick M. Bayer (Smithsonian Institution, Washington) for his extremely useful comments concerning the difficult taxonomy of this group. However, if there should appear to be any misinterpretation of the taxa described, I bear the sole responsibility for this. Finally, I thank Mr. Geoffrey Gornall-Thode (European School, Luxembourg) for correcting my English text.

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Received: November 30, 1989

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